

REMARKS

Applicant respectfully request Examiner Karacsony to reconsider and withdraw the objection to claim 12 and the rejection of claims 14-17 under 35 U.S.C. § 112, and the rejection of claims 14-17 under 35 U.S.C. § 112, in view of the above corrective amendments to claims 12, 14 and 16.

Examiner Karacsony issues the following two statutory prior art rejections:

(1) Claims 12 and 14-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Koyama '988 in view of Stewart '019 (**newly cited**, but listed in Applicant's IDS); and

(2) Dependent claim 13 (13/12) is rejected under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Koyama '988 in view of Stewart '019, and further in view of Bokhari '634.

Applicant respectfully **traverses** these rejections, and respectfully requests the Examiner carefully to reconsider and withdraw these rejections in light of the following rebuttal arguments.

First, the object of Applicant's invention is to increase the sensitivity of an antenna fitted with a ground plane of a wristwatch (page 3, lines 10-12). Advantageously, this is achieved by enlarging the ground plane via a simplified electric connection, "the enlargement being located substantially in the plane containing the ground plane of the antenna" (claim 12 and page 3, lines 12-14).

Koyama '988

Koyama does not disclose or even suggest that:

a) “said printed circuit board [has], at its periphery, a mechanical contact zone bearing on said electrically conductive part of case”.

Indeed, Koyama discloses a circuit substrate 2 and a metal caseback 7. There is no hint about an area at which the substrate 2 is able to be carried by the caseback 7, let alone at its periphery. As shown in Figure 1, the substrate 2 does not bear on the caseback 7 but, rather, is fastened between two plastic members 3 & 5 (column 6, lines 1-3).

b) “a conductive track electrically is connected to said ground plane, said conductive track extending at the periphery of said printed circuit board and at least over said bottom surface of said printed circuit board, over said mechanical contact zone” .

First, as already explained, Koyama does not teach any “mechanical contact zone”. Furthermore, Koyama discloses that the ground pattern 15 can be connected to a second ground pattern 17 of an inner layer for a multilayer circuit substrate 2 (column 9, line 65 to column 10, line 6). As shown in Figures 8 & 9, the second ground pattern 17 extends at the middle part of the substrate 2, i.e., not at the periphery. Finally, it does not extend at the bottom surface of the substrate 2 but lies into it.

c) connection is made “in such a way as to establish an electric contact between said conductive track and said electrically conductive part of the case, so as to enlarge the

ground plane of said antenna in directions extending substantially in the extension of said ground plane, the enlargement being located substantially in the plane containing the ground plane of the antenna, and wherein said the electrically conductive part has a portion thereof extending at least substantially to the level of the bottom surface of the printed circuit board” .

Indeed, Koyama discloses that second ground pattern 17 is mounted under the smaller first ground pattern 15 but not in the same plane and at least in the same level of the bottom surface of the substrate 2 (Figures 8 and 9).

Stewart ‘019

Stewart does not teach or even suggest:

d) “a wristwatch”.

Indeed, Stewart relates to a cellular phone 100.

e) “that the antenna and the ground plane are arranged on a top face of said printed circuit board” .

Indeed, Stewart discloses an antenna (130, 322, 422, 522, 622, 722, 822) which is arranged in the rear section (110, 310, 410, 510, 610, 710, 810), i.e., not on the PCB (115, 315, 415, 515, 615, 715, 815) and even less in its front section (see column 3, lines 39-41). Furthermore, in Stewart, the ground plane (318, 418, 518, 618, 718, 818) seems to extend in an intermediate layer of the PCB (315, etc) (see Figures 3a, 4a, 5a, 6a, 7a, 8, 9 et 10) i.e., not on its top face.

f) “a conductive track electrically connected to said ground plane, said conductive track extending at the periphery of said printed circuit board and at least over said bottom surface of said printed circuit board, over said mechanical contact zone in such a way as to establish an electric contact between said conductive track and said electrically conductive part of the case, so as to enlarge the ground plane of said antenna in directions extending substantially in the extension of said ground plane, the enlargement being located substantially in the plane containing the ground plane of the antenna, and wherein said the electrically conductive part has a portion thereof extending at least substantially to the level of the bottom surface of the printed circuit board” .

In Stewart, it is taught that a PCB trace (317, etc) is connected to the ground plane (318, etc, see column 5, lines 50-53), but it is not even hinted that the enlargement can be located in the same “plane containing the ground plane” and/or that the conductive part of the rear conductive section (310, etc) can extend at least “to the level of the bottom surface of the” PCB (315, etc).

Inventive step

Consequently, the aforesaid feature c) is not hinted at any of cited documents. Indeed, Applicant’s claimed invention relates to a solution for increasing the sensitivity of the antenna by enlarging its ground plane via a simplified electric connection, the enlargement being located substantially in the plane containing the ground plane of the antenna.

Closest prior art

Koyama relates to the same product (wristwatch) as Applicant's invention.

Objective problem

Compared to Koyama, Applicant's claim 12 recites the novel and unobvious features:

“said printed circuit board having, at its periphery, a mechanical contact zone bearing on said electrically conductive part of the case”; and

“a conductive track electrically connected to said ground plane, said conductive track extending at the periphery of said printed circuit board and at least over said bottom surface of said printed circuit board, over said mechanical contact zone in such a way as to establish an electric contact between said conductive track and said electrically conductive part of the case, so as to enlarge the ground plane of said antenna in directions extending substantially in the extension of said ground plane, the enlargement being located substantially in the plane containing the ground plane of the antenna and wherein said the electrically conductive part has a portion thereof extending at least substantially to the level of the bottom surface of the printed circuit board”.

These features lead to a simplified electric connection and an improved sensitivity of the antenna.

Incentive

Stewart relates to a different technical field (cellular phone) in which, for example, the antenna is mounted prominent from the rear section (410, etc). Because of this difference in products, the person skilled in the art would find it difficult, and would not be motivated, to combine Koyama and Stewart.

Combination obviousness

Faced with the two objective problems, i.e., simplify electric connection and improve the sensitivity of the antenna, the person skilled in the art would find no teaching in Stewart to solve these problems.

Indeed, Stewart teaches a conductive part, such as the rear (110, etc) or the front (105, etc) section, having a major dimension less than one-half the perimeter of the PCB (115, etc), is able to improve the efficiency of the antenna (130, etc). Thus, Stewart teaches means for either emitting a signal with less battery consumption, or a greater signal strength with the same battery consumption (column 4, lines 46-61). Stewart is not concerned with an improvement of the sensitivity of an antenna, i.e., its capability to detect a signal but, rather is concerned with its capability to emit with more efficiency.

Furthermore, Stewart discloses nothing about simplification of the electric connection. To the contrary, it discloses to connect the PCB (115, etc) on the front or on the rear with one or

several conductive parts, latter being connected to the ground plane (318, etc) in an intermediate layer of the PCB (115, etc), a much more complicated implementation.

Even if the person skilled in the art would have attempted to combine Koyama and Stewart, there would not be produced the subject matter of claim 12. Indeed, none of the references teaches or even suggests the particular electric connection of the claimed invention, i.e., ground plane 22 on the top face of the PCB 60 connected to a conductive track 65 on the bottom face, the latter bearing on the conductive part 4 of the case. Furthermore, none of the references teaches or suggests that the conductive part 4 of the case has to extend at least to the level of the bottom surface of the PCB 60, permitting enlargement of the ground plane in the same plane in order to improve the sensitivity of the antenna.

Applicant has explained in detailed why the Examiner's proposed modifications of Koyama with Stewart would not have rendered *prima facie* obviousness the subject matter of any of the claims 12 and 14-22. In this regard, the Examiner will note that the combined teachings of these two references do not disclose or even suggest **all the limitations** of the rejected claims. Furthermore, even if one were to modify Koyama with Stewart as proposed by the Examiner, there would not be produced the subject matter of any of the claims 12 and 14-22.

Therefore, Applicant respectfully requests the Examiner carefully to reconsider and withdraw rejection (1) above.

As for rejection (2), even assuming *arguendo* that Bokhari teaches "a microstrip antenna suitable for use in watches...", such a teaching when combined with the teachings of Koyama

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and Stewart would not produce the subject matter of dependent claim 13 (13/12) or subject matter which would have rendered claim 13 obvious. Therefore, Applicant also respectfully requests the Examiner to reconsider and withdraw the rejection (2) above.

In summary, then, Applicant respectfully requests the Examiner to reconsider and withdraw the claim objections, and the rejections under 35 U.S.C. §112, second paragraph, and §103(a), and to find the application to be in condition for allowance with all of claims 12-22.

Request for Interview

On April 16, 2008, the undersigned attorney called Examiner Karacsony regarding a possible telephone interview to present the above detailed analyses of Koyama and Stewart, and the rebuttal arguments based on these analyses. It was agreed that the attorney would first present the analyses and rebuttals in writing, and then, if the Examiner felt that the application was not in condition for allowance, that the Examiner would call the undersigned attorney to conduct a substantive telephone interview. In particular, and as explained above, Applicant feels that the present claims 12-22 do not require amendment in order to overcome the rejections under 35 U.S.C. § 103(a); however, if the Examiner should disagree, a purpose of the promised interview would be to discuss any claim amendments which the Examiner feels might be required for allowance of the application.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this application, and any required fee for such extension is to be charged to Deposit Account No. 19-4880. The Commissioner is also authorized to charge any additional

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fees under 37 C.F.R. § 1.16 and/or § 1.17 necessary to keep this application pending in the Patent
and Trademark Office or credit any overpayment to said Deposit Account No. 19-4880.

Respectfully submitted,

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